NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

October 23, 2012

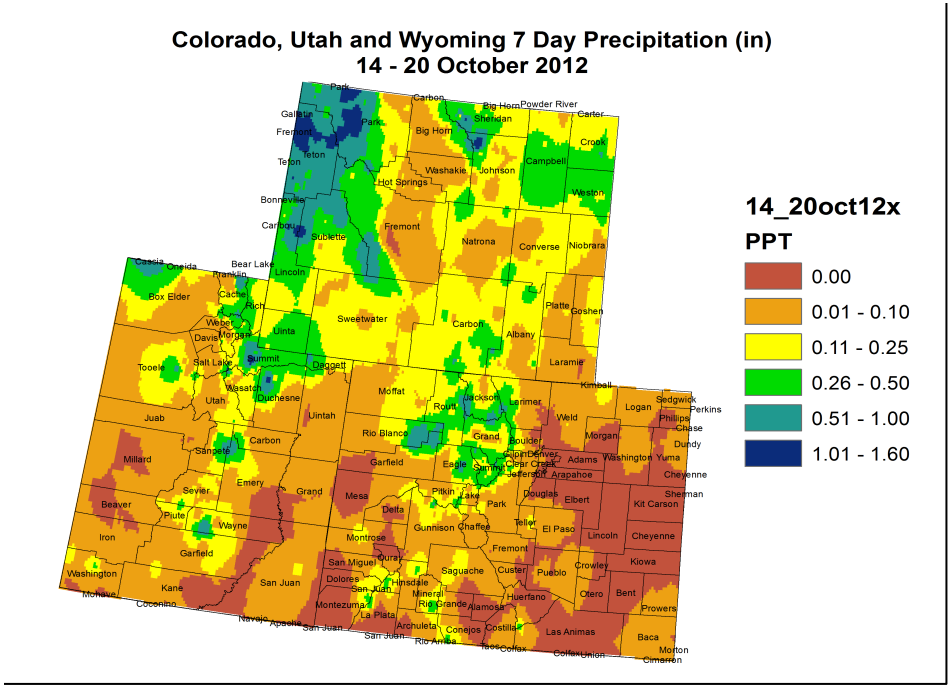


Fig. 1: October 14 – 20 precipitation in inches.

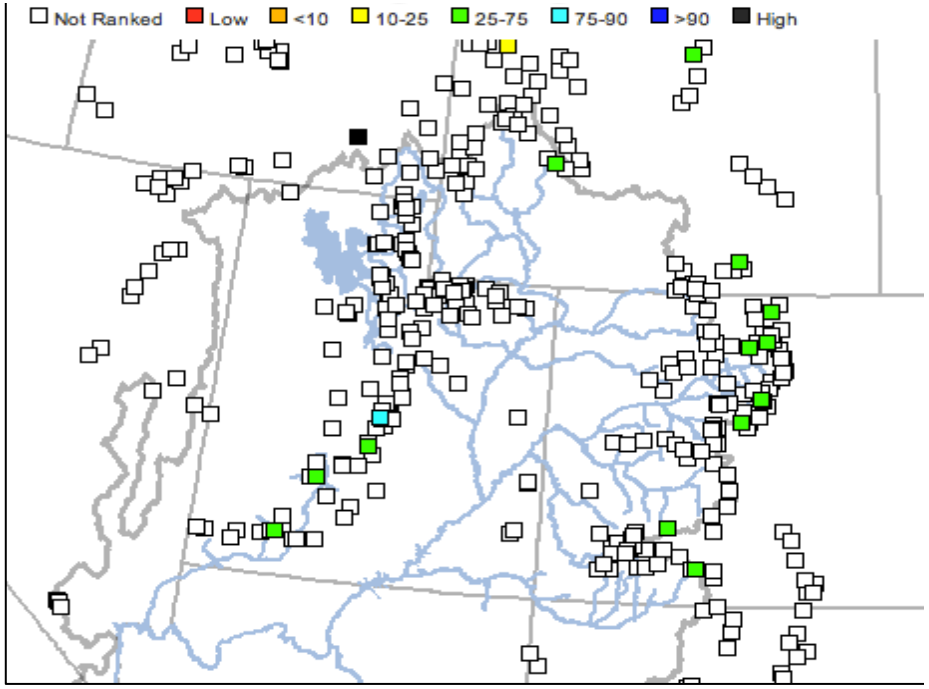


Fig. 2: SNOTEL snow water equivalent percentiles as of October 22nd (product by Colorado Basin River Forecast Center).

Precipitation

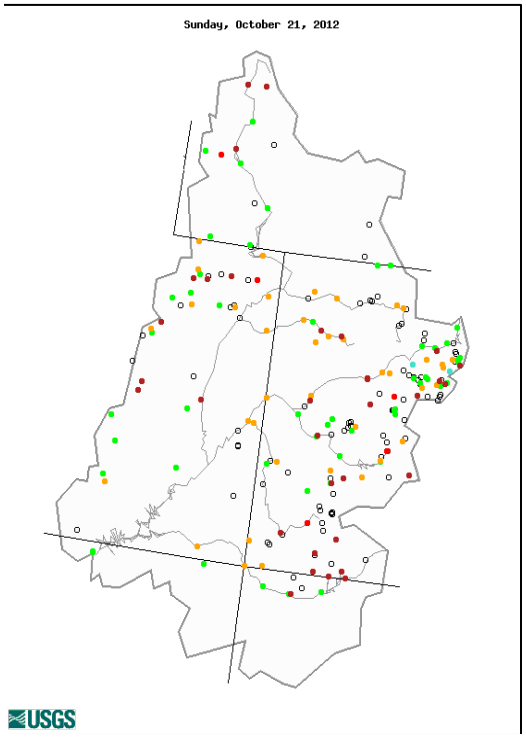
Last week, spotty accumulations between .25 and 1.00 inches fell in the higher elevations of the northern part of the Upper Colorado River Basin (UCRB, Fig. 1). The northern lower elevations received between .01 and .25 inches, while some areas in the southern part of the basin received no precipitation for the week. East of the basin, the rest of CO saw less than .10 inches of precipitation last week, with large areas seeing no precipitation. Since the beginning of the month, most of the UCRB has received between .25 and 2.00 inches of precipitation, while most of eastern CO has received between .10 and .50 inches of moisture.

Only a couple of SNOTEL sites in the UCRB have accumulated snowpack since the beginning of the water year (Fig. 2). Sites with snowpack in the near average range are shown as green boxes. The white boxes denote stations with no snowpack at this time. Most of the sites with snow are along the Continental Divide in northern CO. It is still very early in the water year, though some of the basins are already recording below average snowpack. By the end of October, most sites should have measurable snowpack.

Streamflow

As of October 21st, about 41% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 3). About 30% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows. Much below normal flows are concentrated around the tributaries of the San Juan River, and higher flows are concentrated around the Colorado River headwaters. It is important to note that with baseflows dominating during this time of year, small changes in flows can lead to large percentile changes.

Flows on all three key gages across the basin are in the below normal range (Fig. 4). After a drop in flows the previous week, flows on the Colorado River near the CO-UT state line increased to the 17th percentile last week. Flows on the Green River at Green River, UT and on the San Juan River near Bluff, UT have stayed near steady at the 10th and 19th percentiles, respectively.



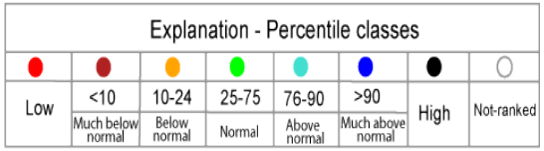


Fig. 3: 7-day average discharge compared to historical discharge for October 21st.

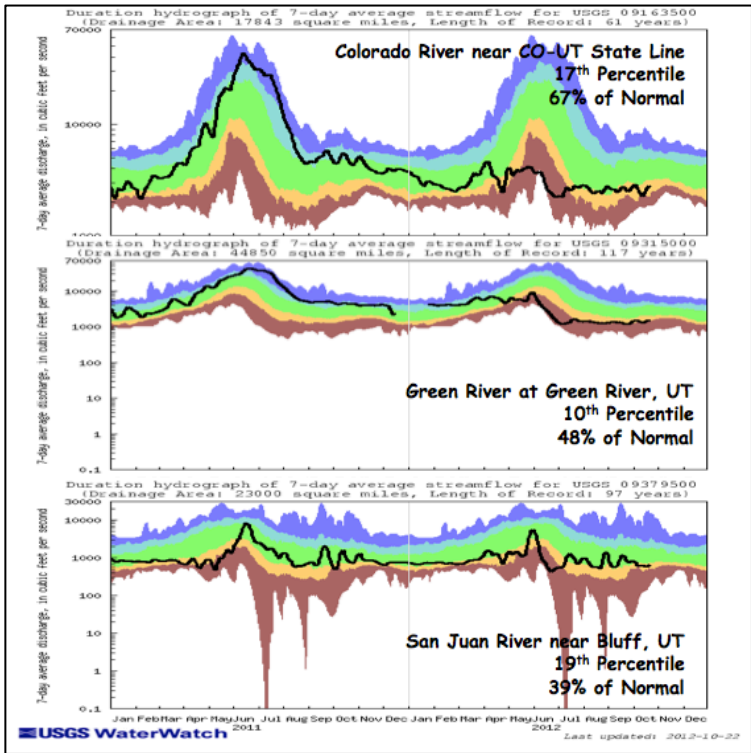


Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).

Water Supply and Demand

Last week most of the UCRB experienced warmer than average temperatures, with some areas seeing temperatures 2 to 4 degrees above average. East of the basin, temperatures ranged from 2 to 8 degrees above average for the week. Satellite vegetation conditions show very dry vegetation through much of the northern part of the UCRB and throughout eastern CO (Fig. 5). Improved vegetation conditions show up along the Continental Divide in CO. The VIC soil moisture model shows very dry soils throughout all of WY, with dry soils extending southward into northeast UT and northwest CO. Very dry soils also show up through much of eastern CO. Near average soil moisture conditions show up along the northern CO mountains and Front Range, and in the San Luis Valley in southern CO.

For the month of October so far, most of the major reservoirs in the UCRB are between 60% and 70% of average, with Flaming Gorge at the high end (97% of average) and Blue Mesa at the low end (52% of average). Since the beginning of the month, all the reservoirs have seen a decrease in storage volumes. Lake Granby and Green Mountain have seen the largest percentage decreases, dropping by 6.1% and 5.8% respectively. Flaming Gorge has stayed near steady since the beginning of the month.

Precipitation Forecast

The UCRB will be situated to the east of a deep trough of low pressure that promises to kick off the accumulation season with the first significant autumn snowfall later this week. A vigorous cold front will advance across the basin through the day on Wednesday with snow levels gradually lowering to valley bottoms as cold air infiltrates the basin from the north. The best moisture with this system will be confined to the northern half of the UCRB, where amounts of 0.50 to 0.75 inches of liquid will be possible across the mountains of northern CO and UT by Friday (Fig. 6). The southern zones will likely not see much in the way of precipitation except along the Continental Divide in southern CO as the system exits the area late on Friday. Strong northwest flow on the back side of the departing trough will keep a chance of orographic snow showers in the northern CO mountains through the weekend while dry conditions and slowly moderating temperatures dominate over the rest of the basin. Models continue to advertise mostly dry conditions moving into next week as a ridge high pressure gradually builds in from the desert southwest.

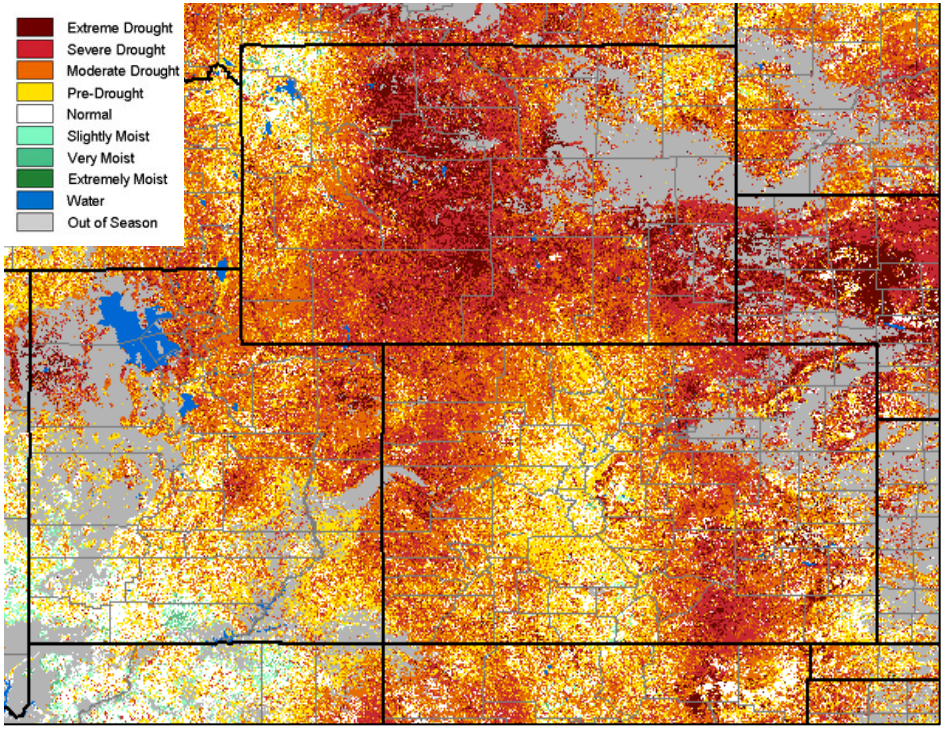


Fig. 5: eMODIS VegDRI showing satellite vegetation conditions as of October 21st.

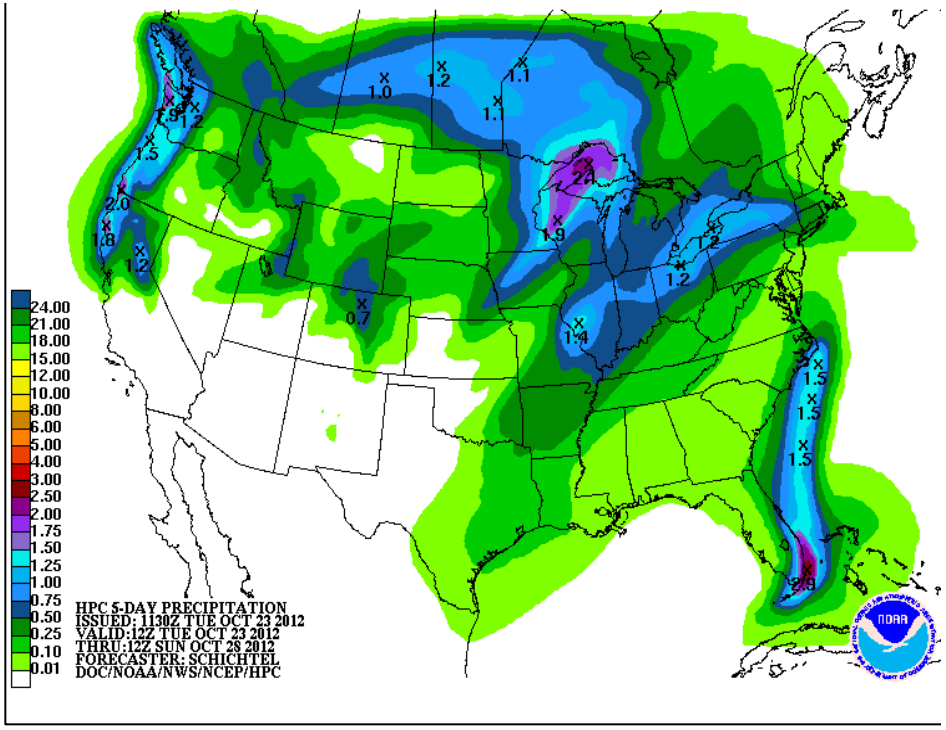
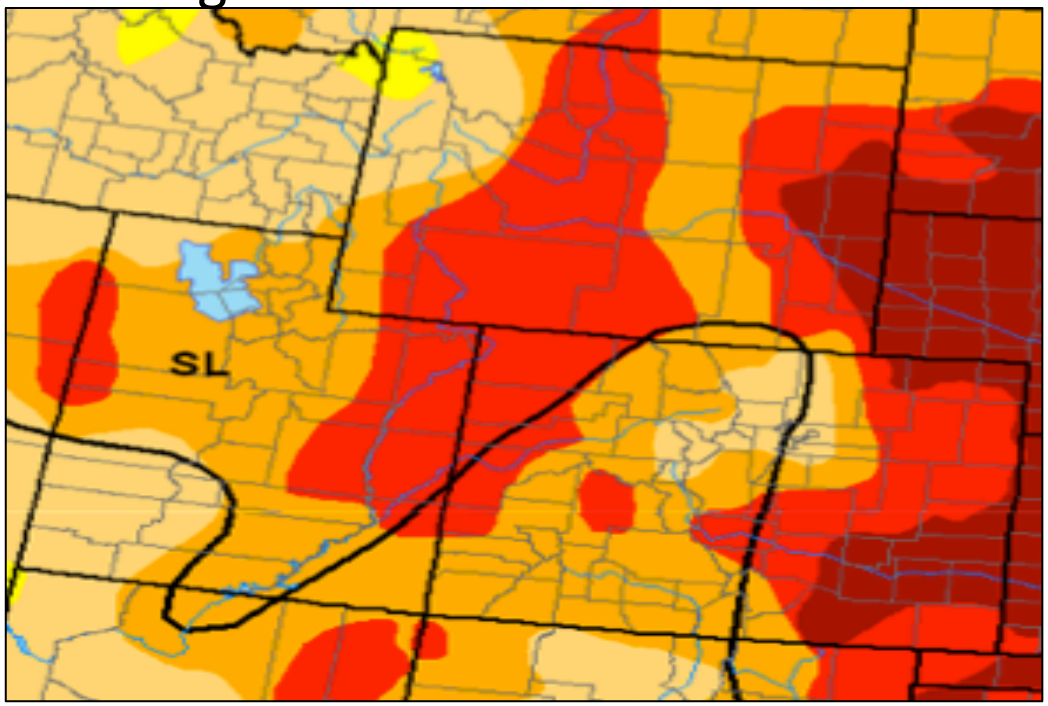


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion



Drought – Exceptional	0 to 2 (D4)
Drought – Extreme	2 to 5 (D3)
Drought – Severe	5 to 10 (D2)
Drought – Moderate	10 to 20 (D1)
Abnormally Dry	20 to 30 (D0)

Drought categories and
their associated percentiles

Fig. 7: October 16th release of U.S. Drought Monitor for the UCRB.

UCRB: Status quo is recommended for the basin in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 7). Forecasted precipitation in the northern part of the UCRB could mean possible improvements in the near future.

Eastern CO: Status quo is recommended for the rest of CO in the current depiction of the USDM map (Fig. 7). Northeast CO will be closely watched for the possibility of degradation and expansion of D4 in the near future, while possible improvements will be discussed for far southeast CO in the near future.